patterned anvils oriented in the direction of travel of the strips. The inwardly extending discontinuous fused borders 28, 30 extending in the cross machine direction are thereafter applied across the width of the segmented strips by ultrasonic bonding units incorporating an elongated horn and rail-like patterned backing anvil oriented generally transverse to the travel path of the strips. The wiper 10 is segmented from the strip by use of a hot knife or laser, which serves to form the sealed edges 24, 26. Of course, any number of other automated or manual techniques may likewise be utilized if desired.

As will be appreciated, the present invention is susceptible to a wide range of alternative constructions. By way of example only, one such alternative construction is illustrated in FIG. 3 wherein elements corresponding to those described in relation to FIG. 1 are designated by like reference numerals increased by 100. As shown, the embodiment of FIG. 3 is substantially identical to that of FIG. 1 except that the double layer borders 38, 40 have been replaced by extended discontinuous fusion zones 148, 150 which extend substantially to the adjacent perimeter edges 118, 120.

In FIG. 4 there is illustrated yet another embodiment of the present invention wherein elements corresponding to those previously described in relation to FIG. 1 are designated by like reference numerals increased by 200. As shown, in this embodiment, the double layer folded edge structures are applied along each of the perimeter edges 214, 216, 218, and 220. This configuration results in the occurrence of double layer borders 260, 262 extending in the cross-machine direction along the first and second perimeter edges 214, 216 with discontinuous fused borders 228, 230 disposed inboard

thereof as shown in FIG. 5. Such a configuration is believed to further reduce the potential for the generation of particulates during use of the wiping cloth 210. Of course, if desired, the discontinuous fused borders 228, 230 may be replaced by substantially continuous fusion zones such as strips extending inwardly from the double layer borders 260, 262.

Aside from the reduction in the potential for particle generation as the edges of the wiper are stretched, the present invention further contemplates that the relative impact of such particles may be reduced substantially through selection of the materials of construction forming the wiper. According to a potentially preferred practice, the wipers of the present invention are formed from polymeric fibers incorporating very low levels of inorganic additives. In particular, the fibers forming the wiper of the present invention are preferably formed of so-called "bright" or "clear" polyester. Such fiber is substantially free of titanium dioxide (TiO_2) or other metal-based opasifying agent as is normally used to impart the traditional brilliant white character associated with polyester. Titanium dioxide and other metallic ion compounds are prone to leeching into solution when placed in a highly acidic environment. In view of the fact that many electronic fabrication procedures utilize highly concentrated acid solutions such as sulfuric acid (H_2SO_4) it has been recognized by the applicants that it may be desirable to reduce the presence of such ionic constituents within any particles which may be generated so as to avoid the accumulation and potential concentration of such ions within cleanroom acid solutions which may be used a number of times.

According to the potentially preferred practice, the fiber forming the wiper according to the present invention is preferably characterized by a concentration of inorganic ionic constituents at a level such that upon complete combustion of the fiber, the remaining ash content is in the range of less than about 0.30% of the initial fiber weight and is more preferably in the range of about zero to about 0.1% of the initial fiber weight and is most preferably in the range of about zero to about 0.3% of the initial fiber weight. One such fiber which may be desirable in the formation of the wiper according to the present invention is believed to be available from E. I. DuPont de Nemours which is believed to have a place of business in Wilmington, Delaware.

Testing

The level of particulate generation associated with cleanroom wiper edges of various constructions has been determined by stretching a 6 centimeter segment of the wiper edge of interest to a length corresponding to the elongation occurring upon application of tension of 6 pounds force. This stretching takes place with the wiper edge held in the vertical position over a 14 cm funnel mounted on the end of an isokinetic probe linked to an airborne particle counter. The inverted wiper segment was stretched and held in tension for a period of 2 seconds and was removed while still taut. Resulting count of generated particles greater than or equal to about 0.3 microns was recorded upon stabilization of the counter.